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Agriculture.

Don't sell agriculture short! By J. L. McCaffrey. Farm implement news. v.60,no.6. March 23, 1939. p.32-34.

Belts.

Belts and belt fasteners. By J. G. Dent. Implement and tractor. v.54, no.8. April 15, 1939. p.16.

Building Construction.

Federal government checking building costs. Brick and clay record. v.94,no.3. March, 1939. p.40. Close check on building costs is being made by officials of Department of Justice who are working in close harmony with staff of the Temporary National Economic committee. Factors that are being investigated are: uniform advances in prices; relations between producer, dealers, and contractors; and union boycotts of certain equipment and materials. Evidence of conspiracy between builders and lending institutions to control new construction and maintain house prices also is being hunted.

How can we reduce construction costs? Federal home loan bank review. v.5,no.6. March, 1939. p.174-175,183.

Building Materials.

Concrete products industry in the field of structures. By W. G. Kaiser. Concrete. v.47,no.2. February, 1939. p.26,28.

Pozzolanic materials - natural and artificial. By Oliver Bowles. Concrete. v.47,no.1. January, 1939. p.113-114. Definite distinction between admixtures and those capable of pozzolanic reaction.

Structural adobe. By L. T. Evans. Engineering news record. v.122,no.15. April 13, 1939. p.498-499. Research indicates modern machine-made product has qualities, including uniformity, that make it an engineering material.

Corrosion.

Corrosion prevention by cathodic protection. By Starr Thayer. Journal of the American water works association. v.30,no.9. September, 1938. p.1442-1450. Paper will attempt to summarize development of cathodic protection from beginning. Deals only with corrosion of buried or submerged metals.

Cotton Gins and Ginning.

Cotton gin operating and testing equipment. By C. A. Bennett and F. L. Gerdes. Cotton ginners' journal. v.10,no.7. April, 1939. p.9,20-21.

Cotton Machinery.

Fan and piping tests at the United States Cotton ginning laboratory. By C. A. Bennett and T. L. Baggette. Cotton ginners' journal. v.10,no.4. January, 1939. p.5-6,16,19.

Dams.

First Mississippi flood-control dam. Engineering news record. v.122,no.11. March 16, 1939. p.376-379. Sardis Dam on tributary of Yazoo River in Mississippi adds first headwaters detention reservoir to modern flood-control works of lower Mississippi River. Nearly 13,850,000 cu. yd. of hydraulic fill in 2-3/4 mile earth embankment of 16,760,000 cu. yd. forms flood detention reservoir of 1,500,000 acre-ft. capacity. As first of several flood-control dams listed in revised lower-Mississippi flood-control plan and as trial of delta soils for hydraulic fill work has great experimental interest.

Grand Coulee of the Columbia. By S. E. Hutton. Reclamation era. v.29,no.3. March, 1939. p.41-42,48.

Diesel Engines.

Cooling requirements for diesel and gas engines. By A. A. Orr. Southern power journal. v.57,no.4. April, 1939. p.61-62, 64,66. Knowledge of the purpose and action of cooling water in engine jackets will enable the operator to reduce maintenance and improve economy.

Duration of combustion in a commercial diesel engine. By A. F. Robertson and others. S.A.E. journal. v.44,no.3. March, 1939. p.117-124,140. Not only does high-cetane diesel fuel start to burn earlier in cycle due to its shorter ignition lag period, but it continues to burn longer during expansion stroke than does low-cetane fuel, authors announce. This and other findings, they explain, are results of investigation of effect of fuel quality and injection advance angle on ignition lag and combustion duration in 4-cycle high-turbulence diesel engine. Combustion characteristics of 27 different fuels were determined by studying oscillograms for more than 5000 engine cycles obtained at a film speed of 60fps. From dynamometer tests run both on 1-cycle and 6-cycle 4-cycle diesel engines, fuel rates were obtained from six different fuels varying in cetane number from 25 to 87.
Comparison of test data from openhead engine with that obtained from separate-chamber type shows that high turbulence in latter engine had no direct effect on ignition lag, they report, although it is noted that greater heat losses due to turbulence caused slight changes in shape of ignition-lag curves.

Diesel Engines. (Cont'd).

Recent European developments in high-speed diesel engines. By P. M. Heldt. S.A.E. journal. v.44,no.2. February, 1939. p.77-84. Explains that automotive-type diesel engines are being used much more extensively in European countries than in United States, principally because of much greater differential between cost of carburetor-engine fuels and diesel fuels in Europe. Specifications are listed for eight diesel engines that either are actually being fitted into stock European passenger cars, or are recommended for purpose. Design features of French, English, German, Swiss, and Czech diesels are discussed.

Drying (Crops).

Natural drying of forage crops. By T. N. Jones. Agricultural engineering. v.20,no.3. March, 1939. p.115-116. 1. Practice of windrowing alfalfa hay aids continuation of natural physiological process of transpiration, resulting in greater moisture loss for day's period. 2. Double-windrowing 2 hours after cutting gives hay with better color, larger percentage of leaves, and lower moisture content at end of day. 3. Data indicate that leaves of alfalfa plants aid greatly in lowering moisture content of entire plant. 4. Photomicrographs showed reopening of stomata following windrowing 2 hours after cut. 5. Process of crushing large-stemmed hays such as Johnson grass and soybeans will permit needed change in methods and will reduce time required in curing.

Some carotene, protein and fiber values of dehydrated alfalfa meals. By Virgil Wodicka and Lamar Kishlar. Agricultural engineering. v.20,no.3. March, 1939. p.109-110,114. Outstanding progress has been made during past few years in development of equipment for dehydrating and in technique of handling artificially dehydrated forage crops, particularly alfalfa. Last available figures were for 1936, when it was estimated that more than 100,000 tons of dehydrated forage products were produced. In spite of fact that large volumes of dehydrated forage products are being produced and consumed each year, there is little information available as to quality of product which can be produced or seasonal variations in chemical composition which may be expected.

Electricity - Distribution.

Electrical development on the Minidoka project. By Dana Templin. Reclamation era. v.28,no.12. December, 1938. p.244-245.

Electricity on the Farm.

Rural electrification in the United States. By J. M. Carmody. Annals of the American academy of political and social science. v.201. January, 1939. p.82-88.

Rural electrification today. Rural electrification news. v.4,no.6. February, 1939. p.19-20.

Evaporation.

Evaporators: their application and installation. By E. C. Gaston. Southern power journal. v.57,no.4. April, 1939. p.34-39. Evaporation as a method of purifying feed water is extensively used in modern plants. Selection of proper evaporator equipment together with performance and operation, is discussed in understandable terms.

Farm Buildings.

Designing farm buildings for wind resistance. By Henry Giese. Agricultural engineering. v.20,no.3. March, 1939. p.99-100,103. Study of wind damage to Iowa farm buildings would lead us to believe that structural improvement to make them highly wind resistant is feasible and can be easily accomplished. Little if any more material than is now being used is necessary. Difference in rigidity between barn and house is sufficient to make latter practically immune while former represents greatest farm loss. Our first great problem lies in finding better methods of construction and making them available to public by means of distribution and of impressing builder with necessity of carefully following details.

Farm Machinery and Equipment.

Agricultural mechanization a national asset. By H. G. Davis. Better farm equipment and methods. v.11,no.8. April, 1939. p.4-5,22-26. Factual analysis of the value and importance of modern farm equipment meriting careful reading and study of all farm factors.

Combine harvester. By G. W. McCuen. Farmers digest. v.2,no.9. January, 1939. p.12-15.

Keeping farm machinery in condition. By B. A. Jennings. Extension service review. v.10,no.4. April, 1939. p.56.

Mechanical cracker. By Arnold Skromme. Iowa agriculturist. v.39,no.8. March, 1939. p.9. Internal-combustion nut cracker developed by California scientists cracks nuts from the inside.

1938 production and sales of farm equipment as shown by report of the U.S. Census bureau. Farm implement news. v.60,no.8. April 20, 1939. p.30-34.

Real soybean planter and it costs little. Farm implement news. v.60,no.8. April 20, 1939. p.36.

Something new in bean machinery. Farm implement news. v.60,no.6. March 23, 1939. p.22.

Fences, Electric.

Electric fences--their use and limitations. By F. W. Duffee. Northwest farm equipment journal. v.53,no.3. March, 1939. p.45-48.

Electric fencing from a farmer's point of view. By H. W. Schilling. Agricultural engineering. v.20,no.3. March, 1939. p.104.

What father of Wisconsin electric fence law says about it. By H. W. Schilling. Farm implement news. v.60,no.8. April 20, 1939. p.27.

Fertilizer Placement.

Increasing efficiency of fertilizer with proper methods of application. By J. B. Hester. American fertilizer. v.90,no.6. March 18, 1939. p.5-7.

Where to place fertilizer. Farmers digest. v.2,no.9. January, 1939. p.32. Increased effectiveness of fertilizer placed in bands to side of seeds or plants and at side of seeds or plants and at proper depth has led some people to believe that method of application is fully as important as fertilizer itself.

Fuels.

Effect of temperature of digestion, chemical composition, and size of particles on production of fuel gas from farm wastes. By G. H. Nelson and others. U.S. Journal of agricultural research. v.58,no.4. February 15, 1939. p.273-287. "Literature cited": p.286-287. Research on anaerobic decomposition of farm waste for production of methane and other gases for use as fuel on farm has been stimulated by development of method of treating sewage in which settleable organic solids are digested anaerobically by bacteria. Large quantities of gas having relatively high calorific value are produced by this method. There are many difficulties, however, in application of this sewage-sludge digestion process to fibrous farm wastes. Their tendency to lie close to or on surface of liquid media in which they are suspended introduces particularly difficult mechanical problem, and their low nitrogen content, in contrast to sewage sludges, makes it necessary to provide additional nitrogen. Purpose of investigation reported in this paper was to ascertain effect of (1) Temperature of digestion. (2) Chemical composition, and (3) Size of particles on rate and quantity of gas produced from fibrous farm wastes by anaerobic microbial decomposition.

Heat Transmission.

Calculating vapor and heat transfer through walls. By L. G. Miller. Heating and ventilating. v.35,no.11. November, 1938. p.56-58. During recent years there has been much discussion concerning passage of moisture through building materials, possible

Heat Transmission. (Cont'd).

or probable damage resulting therefrom and methods of correction. Author summarizes trend of some opinions on this subject. Summary emphasizes three issues: (1) Method of analysis. (2) Quantity of vapor passing through; and (3) Proposed corrective methods.

Effect of solar radiation on the heat transmission through walls: abstract. By F. C. Houghten and others. ASTM Bulletin. No.96. January, 1939. p.39-47.

Flow of heat through walls. By F. E. Giesecke. Heating, piping and air conditioning. v.10,no.12. December, 1938. p.802-809.

Heating.

Designing hot water heating systems. By Erwin L. Weber. Heating, piping and air conditioning. v.11,no.2. February, 1939. p.79-82.

Forced air heating. By Platte Overton. 2d edition. Chicago, Keeney publishing company, 1937. 215p.

Heating, ventilating, air conditioning guide, 1939. By American society of heating and ventilating engineers. New York, N.Y. c1939. 1160p.

Relationship between type of house heating equipment and kind of fuel used. By Guerry R. Smith. Domestic commerce. v.23,no.1. January 10, 1939. p.5-7.

Heating, Electric.

New uses and equipment for electric heat. By G. E. Mullin, Jr. Agricultural engineering. v.20,no.1. January, 1939. p.11-12. Control of tobacco blue mold. Control of foliage diseases of tomato plants. Pig brooders. Electric pasteurizer. Portable forced air heater. Portable natural convection air heater. Portable water heater. Other uses for soil-heating cable.

Hotbeds, Electric.

Sprout process. Rural electrification and electro-farming. v.14, no.162. November, 1938. p.100-101. Sprout process consists of rapid germination of cereal seeds under controlled conditions of warmth and moisture.

Hydroponics.

Growing plants without soil. By W. H. Friend. Farmers digest. v.2,no.11. March, 1939. p.23-27.

Growing plants without soil by nutrient solution methods. By W. G. Templeman and S. J. Watson. Journal of the Ministry of agriculture. v.45,no.8. November, 1938. p.771-781.

Hydroponics. (Cont'd.)

Soilless farming. By V. G. Frost. Farmers digest. v.2,no.9. January, 1939. p.39-42.

Insulation.

Accordion-folded aluminum insulation. Scientific american. v.158, no.5. May, 1938. p.296. Called Air-Met. Outstanding advantages claimed, in addition to high thermal efficiency, light weight, and ease of application, are easy portability, imperviousness to moisture and vermin, long life, and elimination of dirt and inconvenience. New product consists, primarily, of two thin, parallel sheets of aluminum foil, definitely spaced about an inch apart by series of triangular air cells of uniform size. Between two sheets of foil is light, flame-proof member which, by reason of its truss-like design, serves double purpose of holding foil sheets parallel and insuring perfect uniformity in size and spacing of intervening air cells. When properly installed, provision is also made for air space between outer surfaces of two sheets of foil and surrounding studs, rafters, sheating, wallboard or protective paper.

Discussion of test methods for determining the physical properties of thermal insulations: abstract. By H. H. Rinehart. ASTM Bulletin. No.96. January, 1939. p.31-35.

Factors influencing the thermal conductivity of non-metallic materials: abstract. By J. B. Austin. ASTM Bulletin. No.96. January, 1939. p.29-31.

Factors affecting thermal conductivity of non-metallic materials. By J. B. Austin. Brick and clay record. v.94,no.3. March, 1939. p.42,44. These factors include chemical composition, physical texture, temperature, pressure, stress, or strain, and heat flow.

Glass fiber enters electrical insulation field. Electrical world. v.110,no.21. November 19, 1938. p.40-42,110. Electrical equipment already insulated with glass fibers appears to withstand severe conditions of acid, oil or corrosive vapor and that of high temperature to unusual degree.

Insulate laying house. By W. C. Sanctuary. New England homestead. v.112,no.3. February 11, 1939. p.32-33. Prevents loss of animal heat, aids in making walls windproof and in preventing condensation.

Insulation makes house better. Idaho farmer. v.56,no.23. November 10, 1938. p.18. Easily applied in new or old construction.

Metallic heat insulation. By J. G. Coutant. Southern power journal. v.57,no.4. April, 1939. p.48-51. Reflective quality

Insulation. (Cont'd.)

of bright metal foil makes it especially resistant to passage of radiant energy. It is particularly useful as supplement to more common insulating materials.

One consumer's problems in selecting thermal insulation: abstract. By E. T. Cope and W. F. Kinney. ASTM Bulletin. No.96. January, 1939. p.35-39.

Physics of heat insulation. By A. W. Smith. Engineering experiment station news, Ohio state university. v.11,no.1. February, 1939. p.39-46.

Vapor-proof warm side and let cold side breathe to colder air, in construction of storage rooms, says insulation engineer. Air conditioning and refrigeration news. v.26,no.5,serial no.515. February 1, 1939. p.13. Construction complies with requirements in that: 1. It permits adequate control of heat conductivity of construction, as efficient insulation can be used in required thicknesses. 2. Use of adequate vapor barrier on warm side of construction is effective in stopping air leakage in or out of room, and preventing entrance of moisture into room. 3. With vapor barrier on warm side of construction, moisture is effectively kept out of insulation, and vapor-porous construction on cold side permits continuous dehydration of insulation, giving best assurance possible that insulation will continue to function at maximum efficiency.

Irrigation.

Development of methods for thorough irrigation. By Colin A. Taylor. California citrograph. v.24,no.2. December, 1938. p.52.

Irrigation. In Forty-eighth annual report for the fiscal year ended June 30, 1938. Pullman, Washington, 1938. p.89. State college of Washington. Agricultural experiment station. Bulletin no.368.

Irrigation and the conservation of the range. By W. W. McLaughlin. Soil conservation. v.4,no.7. January, 1939. p.175-177.

Irrigation branch experiment station. By H. P. Singleton and others. In Forty-eighth annual report for the fiscal year ended June 30, 1938. Pullman, Washington, 1938. p.76-77. State college of Washington. Agricultural experiment station. Bulletin no.368.

Irrigation increases yield and improves quality of long-season truck crops. Stillwater, Okla., 1939. p.110. Oklahoma A. & M. college. Agricultural experiment station. Report, July 1, 1936 to June 30, 1938.

Low-pressure sprinkler irrigation. By F. W. Duffee. Agricultural engineering. v.20,no.3. March, 1939. p.97-98.

Irrigation. (Cont'd).

Rainstorms on tap. By I. M. Howard. Farmers digest. v.2,no.9. January, 1939. p.7-9.

"Rainmaker" helps soil conservation. By Carroll H. Coberly. Engineering news record. v.122,no.3. January 19, 1939. p.51-52. Pump-spray device developed by engineers working in Soil Conservation Service gives controlled rainfall rates over small areas and so makes possible rational design of surface contouring to reduce concentrations of runoff from severe storms to minimum. Data on soil absorption in severe rain storms are by product.

Report of the national irrigation board for the year 1937. Royal Hungarian Ministry of agriculture. Hydraulic proceedings: short summaries of the articles. 1938--I. p.13-14. In the Hungarian text p.5-38.

Utah's irrigation program leads to water and soil conservation. Extension service review. v.10,no.2. February, 1939. p.29. It is estimated that approximately 6 million acre-feet of water are available in Utah, nearly 4 million of which are allocated in water rights of 1,324,000 acres.

Water application efficiencies. By O. W. Israelsen. Agricultural engineering. v.20,no.2. February, 1939. p.55-56. Water application efficiency is clearly dimensionless physical quantity which is not direct function of crop responses to irrigation. It is measure of degree of soil moisture storage attained under particular method of application.

Water for vegetable crops. By L. D. Doneen. Market growers journal. v.64,no.6. March 15, 1939. p.160-162. Reports results of carefully controlled studies on soil moisture and on irrigation of tomatoes.

Lighting.

All-night lights beneficial during winter months. In Science serving agriculture. Report of Agricultural experiment station, Oklahoma A. & M. College for July 1, 1936 to June 30, 1938. Stillwater, Okla., 1939. p.160.

Artificial lighting. By G. V. Downer. Electrical review. v.124,no.3193. February 3, 1939. p.159. Advantages of indirect systems.

Methods of light control. By C. E. Weitz and R. F. Cissell. Magazine of light. v.8,no.3. April 20, 1939. p.27-29,35. Part I.

Looms.

New type of loom picker. Silk journal and rayon world. v.15, no.174. November, 1938. p.43. Inventor describes in

Looms. (Cont'd).

this article a new type picker which may lead to a complete change in the construction of this important loom component.

Review of loom picking mechanisms. By Albert Palmer. Rayon textile monthly. v.19,no.11. November, 1938. p.61-64.
Review and appraisal of problems of inserting filling yarn between warp threads in process of weaving.

Lubrication.

How to lubricate with Wick-Feed oilers. By James I. Clower. Power. v.83,no.4. April, 1939. p.88-90.

Selecting refrigerating machine lubricants. Power plant engineering. v.43,no.2. February, 1939. p.135-136.

Lysimeters.

Lysimeter studies with the decomposition of summer cover crops. By R. M. Barnette and others. Gainesville, Fla., 1938. 44p.
Florida. Agricultural experiment station. Bulletin 327.

Miscellaneous.

Chemistry's newest sleuth. By A. L. White. Scientific american. v.158,no.5. May, 1938. p.276-277. Micro-analysis enables chemists to study minute samples. Diagnoses product flaws and ailments. Supplements usual laboratory methods. Use of this method has helped to make possible perfect operation of many of present-day household machines and appliances. It has been used to discover flaws in refrigerators, in heating units, in telephone apparatus, and in vacuum tubes, for analyzing minute specimens in biology and medicine, and in solving engineering problems.

Development of chemical industries in the south. Manufacturers record. v.108,no.1. January, 1939. p.42,58.

Engineering's part in the development of civilization. By D. C. Jackson. Science. v.89,no.2307. March 17, 1939. p.231-237.

Fourth Oxford farming conference, New Playhouse, Oxford, January 3-5, 1939. Oxford, Alden press, 1939. 123p.

Intuition, reason and faith in science. By George D. Birkhoff. Science. v.88,no.2296. December 30, 1938. p.601-609.

Magazines contributing most frequently to the index of Current literature in agricultural engineering. Washington, D. C., 1938. 26p. mimeographed. U.S. Department of agriculture. Bureau of agricultural engineering.

Miscellaneous. (Cont'd).

Official and tentative methods of analysis of the Association of official agricultural chemists. 4th ed. Washington, D.C., Association of official agricultural chemists, c1936. 710p.

Professional aims of the civil engineer. By Carlton S. Proctor. Civil engineering. v.9,no.3. March, 1939. p.151-152.

Progress report, 1938; Statement of the Advisory committee. Washington, U.S. Govt. print. off., 1939. 51p. National resources committee.

Study of the work of the land grant colleges in the Tennessee valley area in cooperation with the Tennessee valley authority. By C. R. Ball. n.p., 1938. 84p. mimeographed.

Motor Fuel.

Engine using sludge gas fuel gives low operating cost. Engineering news record. v.122,no.13. March 30, 1939. p.60-61. After 2-1/2 years of highly satisfactory operation at Los Angeles, capacity of gas engine installation is doubled. Table I--operating costs on 200-HP. gas engine May 4, 1935, to Oct. 14, 1937. Table II--Estimated power cost with present gas engine installation.

Motor fuel economy of Europe. By Gustav Egloff. Industrial and engineering chemistry. v.30,no.10. October, 1938. p.1091-1104. Self-sufficiency strikes keynote for desires of most European nations. Production of substitute motor fuels derived from their own resources, such as coal, wood, oil shale, and agricultural products, is one of the goals. Economics involved is not primary factor. Coal is converted into liquid motor fuel by carbonization, hydrogenation, and water gas reaction. Alcohols from farm products and methanol from hydrogenation of carbon monoxide and wood distillation are also used. Methane, ethane, propane, and butanes, or city gas, are used in compressed form in steel cylinders (3000 to 4000 pounds per sq. inch pressure) in gas-driven motor vehicles. These gases are derived from coal carbonization, coal hydrogenation, and from hydrogenation of carbon monoxide, and natural gas. There are about 26,000 of this type of motor vehicle in use. Other types of gas-driven vehicles manufacture their own combustible gas en route from wood and charcoal. There are about 9000 such wood-burning motor vehicles in Europe consuming about 450,000,000 pounds of wood yearly. These vehicles are heavily subsidized by governments through direct payments, elimination of taxes on wood and vehicle, and taxes on imported gasoline. Total consumption of power alcohol in Europe in 1937 amounted to 510,000 tons compared with 646,000 tons during 1936. The 510,000 tons of ethanol (some methanol) represented 4.3 per cent of total 11,882,600 metric tons of motor fuel consumed during 1937 in Europe. It is estimated that 510,000 tons of alcohol used in Europe cost consumer and state in additional expenditures on order of about $100,000,000 in subsidies, tax losses, and higher operating costs of vehicles.

Motor Fuel. (Cont'd).

Research on motor fuels. By Gustav Egloff. Engineering experiment news. Ohio state university. v.11,no.1. February, 1939. p.17-28.

Motors, Electric.

Characteristics and selection of direct-current motors. By M. S. Hancock. Electric journal. v.36,no.3. March, 1939. p.95-96.

General-purpose motors--method of selection. By M. S. Hancock. Electric journal. v.36,no.2. February, 1939. p.49-52. Characteristics of the various types of induction motors and their relative costs actually give an answer to the buyer's question: What motor will fit this job?

Power economy of electric motors. By J. V. Hunt. Farm machinery and equipment. No.1859. November, 1938. p.28. Same fundamental operation characteristics which have made electric motor succeed so well in industry make it most desirable power unit for driving coupled or belted farm machinery.

3 to 5 horsepower motors used in new irrigation system. Rural electrification news. v.4,no.7. March, 1939. p.21-22. Ideal for use with overhead sprinkling systems. Most overhead irrigation systems are easy to handle. Sprinkling lines of light steel pipe--little heavier than downspouting and with quick couplers for instant connection--are generally used. Such pipe usually comes in 3--,4--, and 6-inch diameters and in 20-foot sections with sprinkler connections at coupling. In general practice supply lines are permanently installed under cultivation level with outlets for sprinkling lines. Strip the length of supply line and extending from 800 to 1,000 feet to either side of line can then be irrigated with portable sprinkling lines. Water can be drawn from lakes, rivers, or well. If water is not more than 15 feet below surface centrifugal pumps can be used with electric motor rather than more expensive turbine pumps. It is cheaper to dig 15- to 20-foot pit in order to install centrifugal pump within 15 feet of water than to install turbine pump. Irrigation sprinklers will distribute up to 30 gallons per minute over circle 90 feet across.

Nylon.

"Nylon" and its identification. By Werner von Bergen. Rayon textile monthly. v.20,no.1. January, 1939. p.53-57.

Paints and Painting.

Paint to meet farm service conditions. By W. O. Gairns. Agricultural engineering. v.20,no.2. February, 1939. p.50,54.

Painting problems. By R. Wallace Ward. New England homestead. v.112,no.5. March 11, 1939. p.28.

Paints and Painting. (Cont'd).

Shopping for paint. Consumers' guide. v.5,no.17. February 13, 1939. p.3-6,19. From the U.S. Forest Service come cautions and cues for consumers who are in search of values in paints.

Test results of metallic zinc paint on galvanized sheet metal. By G. C. Bartells. Agricultural engineering. v.20,no.3. March, 1939. p.101-103. Primary object of these tests is to determine suitability of certain types of paints for application to, and protection of, galvanized sheet metal sheets in various stages of corrosion.

Patents.

Needs of our patent system. By Delos G. Haynes. Industrial and engineering chemistry. v.30,no.12. December, 1938. p.1430-1432.

Symposium on American patent practice and procedure: present American patent system. By Frank E. Barrows. Industrial and engineering chemistry. v.30,no.12. December, 1938. p.1420-1423.

Pest Control.

Protecting fruit trees against mice and rabbits. By T. A. Merrill. East Lansing, Mich., 1939. 6p. Michigan state college. Extension division. Bulletin no.196.

Tractor crop dusters check boll weevils. Implement and tractor. v.54,no.6. March 18, 1939. p.39-48.

Wake up! By Paul W. Dempsey. New England homestead. v.112,no.5. March 11, 1939. p.7,19. Vegetable grower must take his posts more seriously.

Pools.

Pool construction. Architectural record. v.84,no.5. November, 1938. p.138-139. Scale drawings.

Potatoes.

Injuries to potatoes from different handling methods. In Agricultural experiment station report, two years ended June 30, 1938. Michigan state college of agriculture and applied science, East Lansing. p.6. Mechanical injury of potatoes handled over graders and then placed in bulk storage in bins ran as high as 16 per cent, while corresponding samples handled in crates or boxes ran as low as one per cent.

Poultry Houses and Equipment.

Laying houses from remodeled barns. By John Vandervort. Pennsylvania farmer. v.119,no.4. August 13, 1938. p.12.

Profit by experience. By Roy E. Jones. New England homestead. v.112,no.3. February 11, 1939. p.7,27. Construct hurricane-proof poultry houses without sacrificing service and economy.

Turkey production. By T. T. Milby and others. Stillwater, Okla., 1939. 38p. Oklahoma A. & M. College. Agricultural experiment station. Bulletin no.236.

Power Farming.

A time study of contouring and straight farming. By Kenneth P. Zunkel. Soil conservation. v.4,no.6. December, 1938. p.129-131. Table I.--Time required per acre for farming a straight-farmed and a contour-terraced field of corn. Table II.--Time required per acre for farming a straight and a contour strip-cropped field of corn. Table III.--Comparison of average time, per acre, of tillage and planting operations for corn, using the most popular sized machines found in the study.

Production Costs.

Cost of producing field crops, 1937. Crops and markets. v.15,no.12. December, 1938. p.298-299. Table I.--Corn, wheat, and oats: estimated cost of production in 1937 and the estimated cost per bushel on a 10-year average yield basis. Table II.--Cotton: estimated cost of production, by selected states and regions in 1937, and the estimated cost per pound of lint on a 10-year average yield basis.

Pumps and Pumping.

Automatic pumping equipment. By S. A. Canariis. American water works association. Journal. v.30,no.8. August, 1938. p.1388-1398. Pump priming. Discharge valves. Relief valves. Strainers. Motors. Motor control. Bearings. Protection against condensation. Pump control.

Efficiency and cavitation tests of centrifugal pumps. Canadian engineer. v.75,no.22. November 29, 1938. p.6-9. Interesting results obtained during tests to develop various types of high efficiency pumps of Canadian design!

New development in deep well pumping. By D. W. Conkling. American water works association. Journal. v.30,no.8. August, 1938. p.1399-1408. Submersible deep well turbine. Use of a mercury seal. Use of a balancing chamber. Dependability and maintenance.

Pumps and Pumping. (Cont'd).

What's a Turbine pump? By E. L. Abramson. Power. v.83,no.4. April, 1939. p.94-95. It's a centrifugal type, but it can develop several times the pressure of a centrifugal of equal impeller diameter operating at the same speed.

Quick Freeze.

Comparing methods of freezing fruits and vegetables. By J. G. Woodroof. Refrigerating engineering. v.37,no.1. January, 1939. p.9-12.

Effects of freezing on the vitamin content of vegetables.--A review. By Gerald A. Fitzgerald. Refrigerating engineering. v.33,no.1. January, 1939. p.33-39.

Mehrstufiges schnellgefrieren. By W. Pohlmann. Kälte industrie. v.35,no.12. December, 1938. p.137-140. Quick freezing by degrees.

Quick-freezing methods compared. By J. G. Woodroof. Ice and cold storage. v.42,no.490. January, 1939. p.13-14. Useful data on systems employed for fruits and vegetables.

What is ahead for the frozen food industry in the southeast. By C. T. Baker. Refrigerating engineering. v.37,no.2. February, 1939. p.98-99.

Reclamation.

Dr. Lowdermilk writes on Holland's contest with the sea. Soil conservation. v.4,no.6. December, 1938. p.148-151.

Two examples of land reclamation in E. Suffolk. By F. H. Garner. In Fourth Oxford farming conference, New Playhouse, Oxford, January 3-5, 1939. Oxford, Alden press, 1939. p.106-117.

Refrigerating Machinery.

Schiffskältemaschinen und schiffskältetransporte. By O. E. Schneider. Zeitschrift für die gesamte kälte industrie. v.46,no.1. January, 1939. p.2-7. Refrigerating machinery on ship and refrigerated storage on ship.

What about the new fences? Farm machinery and equipment. No.1860. December, 1938. p.10-11. Some information about the latest developments in fences and fence galvanizing processes.

Refrigeration.

"Coolercar". By H. A. Cardinell. Refrigeration. v.65,no.11. March 13, 1939. p.2.

Refrigeration. (Cont'd).

Electric milk refrigeration at the farm. By J. E. Nicholas and R. U. Blasingame. State college, Penna., 1939. 38p. Pennsylvania state college. Agricultural experiment station. Bulletin no.375.

Food preservation conference. Ice and refrigeration. v.95,no.6. December, 1938. p.441-443. Conference on preservation of food held at University of Tennessee, Knoxville, Tenn., October 20 and 21, with cooperation of A.S.R.E. New refrigeration unit announced.

Frozen food institute planned. Refrigeration. v.65,no.11. March 13, 1939. p.3. Fred E. Scott, former sales manager of the John F. Jelke company, Chicago, was voted chairman of steering committee at meeting here, to sound out sentiment toward founding of Frozen Foods Institute that would help to bring a measure of order out of the chaos now enveloping the new and fast growing industry. Meeting was held under auspices of National Food Distributors' Association.

Ice industry and rural electrification. By C. B. Wissing. Refrigeration. v.65,no.13. March 27, 1939. p.7-8.

Laboratory aspects of low temperature refrigeration. By A. V. Ritchie and others. Refrigerating engineering. v.37,no.2. February, 1939. p.90-94,126,128.

McGovern describes effects of moisture in refrigeration units and explains methods of keeping it from entering the system. By E. W. McGovern. Air conditioning and refrigeration news. v.26,no.11, serial no.521. March 15, 1939. p.14-15.

Milk cooling by mechanical refrigeration. By J. W. Purcell. Canadian society of technical agriculturists review. No.4. March, 1935. p.205-207.

Refrigeration on Cars, Trucks, Etc.

Refrigerator car is used for farm precooling plant. By H. H. Slawson. Ice and refrigeration. v.96,no.2. February, 1939. p.145-146.

Retired refrigerator cars for air--and ice--cooled storage. By H. A. Cardinell. Refrigerating engineering. v.37,no.1. January, 1939. p.29-30.

Refrigerator Lockers.

Bibliography on refrigerator lockers; A selected list of references. Compiled by D. W. Graf, Librarian, Bureau of agricultural engineering. Washington, D.C., 1938. 6p. mimeographed.

Food preparation and utilization aspects of refrigerated locker storages. By Sybil Woodruff. Agricultural engineering. v.20,no.3. March, 1939. p.105-107. In spite of gaps in available

Refrigerator Lockers. (Cont'd).

known facts concerning all aspects of frozen-pack foods, increase in their use and popularity is going on apace. This is true of both locker and commercial storages. It would be of great interest to know whether patrons of locker systems have felt satisfied with quality of meats which have been thus preserved, or whether considerable amount has been thrown away as being unfit for eating. There seems to be too little background of experience and of laboratory findings for it to be said just now whether from standpoint of economy and quality, rural people in this part of United States should be encouraged to extend their use of freezing locker systems to preserving their own vegetables and fruits. "Literature cited": p.107.

Refrigerated food locker plants. By W. H. Motz. Ice and refrigeration. v.95,no.6. December, 1938. p.446-452.
Growth and development of refrigerated food locker plants, plant layout, refrigeration requirements--description of plants installed in Chicago area by Jefferson Ice Company.

Refrigerated lockers for food storage. By A. A. Geiger. Agricultural engineering. v.20,no.3. March, 1939. p.108.

Research.

Co-operation in agricultural research. By J. M. Swaine. Canadian society of technical agriculturists review. No.6. September, 1935. p.324-330.

Cooperative research and demonstration in the Tennessee Valley area. Experiment station record. v.80,no.4. April, 1939. p.433-437.

Director of research. British sugar beet review. v.12,no.7. March, 1939. p.200. Establishment of central research institute for sugar beet industry came slightly nearer last month, when Sugar Commission announced that they would consider applications for post of Director of Sugar Beet Research. Duties of Director, stated the Commission, will be: (a) to advise Commission on technical problems associated with sugar beet growing; (b) to take charge of sugar beet experimental station; (c) to carry out such experiments and demonstrations as Commission may require; (d) to co-ordinate results of related investigations in progress at other centres; (e) to prepare such reports and programmes of work, and to carry out such other duties in connection with scheme of education and research, as the Commission may require.

Federal relations to research. Washington, U.S. Govt. print. off., 1939. 29p. National resources committee.

Manual labor reduced through research. Farm machinery and equipment. No.1859. November, 1938. p.30. Scientific research

Research. (Cont'd).

has provided leisure, supplied money, and conserved energy for enjoyment of better things for better living which it has created.

Plan for cooperative rural research. Prepared by S. H. Hobbs, Jr. and others. Washington, 1938. 56p. Works progress administration. Division of social research. Series II. No.17.

Progress in the organization of the Federal research laboratories for new and extended uses of farm commodities. U.S. Department of agriculture. Experiment station record. v.80,no.3. March, 1939. p.289-292.

Research as a design and construction tool. Engineering news-record. v.122,no.13. March 30, 1939. p.65-68. Research in the laboratory of the U.S. Bureau of reclamation at Denver is of a type that is of interest to every engineer and construction man; for it is concerned with ways to design and build actual structures. This article tells what this great civil engineering laboratory does and reports some of its current work.

Research speeded to aid King Cotton. Science news letter. v.35, no.11. March 18, 1939. p.169. One new application of cotton is use of cottonseed hulls as basic ingredient of better sweeping compound.

Research viewpoints. Agricultural engineering. v.20,no.2. February, 1939. p.46,53,72. Recommendations: "That steps be taken to improve methods of recruiting research workers for governmental service and to provide more effective in-service training for civil employees of Government. That research within Government and by nongovernmental agencies which cooperate with Government be so organized and conducted as to avoid possibilities of bias through subordination in any way to policy-making and policy-enforcing. That research agencies of Government extend practice of encouraging decentralized research in institutions not directly related to Government and by individuals not in its employ."

Survey of certain research problems. Paint, oil and chemical review. v.100,no.23. November 10, 1938. p.62-67. 1. Plea is made for closer cooperation between paint industry and university research laboratories. 2. Modus operandi is offered for such cooperation using technical committees of production club nearest to university as contact point. 3. For technical or engineering school this cooperation provides means of keeping teaching abreast with important chemical industry and facilitates placement of its students in this industry through these contacts and through research work on problem of industry. 4. Series of twenty-two problems of vital interest to paint industry is outlined together with suggestions as to possible procedure.

Value of research. By Ernest B. Benger. California cultivator. v.85,no.24. November 19, 1938. p.709.

River Control.

River-control problems. By Herbert Chatley. Engineering. v.146, no.3803. December 2, 1938. p.638. Part II--Deforestation and climatic change.

River-control problems. By Herbert Chatley. Engineering. v.146, no.3806. December 23, 1938. p.740-742. IV.--Stable sectional form of alluvial rivers.

River-control problems. By Herbert Chatley. Engineering. v.146, no.3807. December 30, 1938. p.754-755. VI.--Stability of dredged cuts.

Roofs.

Above all--an economically laid, weather-permanent roof. By W. W. Wheatly. Successful farming. v.37,no.2. February, 1939. p.18,36,60-61.

Roofs that weather the storm. By A. O. Braeger. Farmers digest. v.2,no.9. January, 1939. p.45-47.

Rubber.

New bureau to develop farm uses for rubber. Implement and tractor. v.53,no.23. November 12, 1938. p.36. Crude Rubber Development Bureau, Munsey Building, Washington, D.C. New organization will function as part of international project to study and publicize new markets for and increasingly important uses of crude rubber. Bureau is to carry out program in United States, similar to that which has been developed by British Rubber Publicity Association during past year in England and Empire countries, in which use of rubber in agriculture is prominently featured and for first year of its operation Bureau aims to concentrate its activities almost exclusively in agricultural field.

Seed Testing.

Experiments on wheat grown from seed treated in advance by electricity. By G. Stampa. Monthly bulletin of agricultural science and practice. Year 29,no.12. December, 1938. p.459T-462T. Table gives comparisons between untreated and treated wheats.

Planting value of oats and barley collected from farmers' drills and granaries. By W. F. Crosier. Geneva, N.Y., 1938. 46p. New York state agricultural experiment station. Bulletin no.681.

Practical seed treater inexpensive. Farm machinery and equipment. No.1862. February, 1939. p.34. Gives reproduction of available blue print for making a rotary seed-treater.

Practical seed treater inexpensive. Better farm equipment and methods. v.11,no.6. February, 1939. p.13.

Sheep Dips.

Portable sheep dipping tanks. In Twenty-seventh annual report of Purdue university, Department of agricultural extension, July 1, 1937 to June 30, 1938. Lafayette, Ind., 1938. p.29.

Sheep dipping. By A. A. MacMillan. Ottawa, Canada, 1939. 4p. Dominion of Canada. Department of agriculture. Circular no.130. (Reprint of circular no.29).

Silage.

Digestibility and feeding value of apple and apple alfalfa silage. By J. C. Knott and others. Pullman, Washington, 1938. 20p. Literature cited, p.20. Washington, Agricultural experiment station. Bulletin no.362.

Silos.

Big potential construction market in concrete silos. Concrete. v.47,no.1. January, 1939. p.34.

New methods of ensilage. By H. J. Hopfen. Monthly bulletin of agricultural science and practice. Year 29,no.12. December, 1938. p.472T-475T. Discusses Falavigna and Haimerl silos.

Trench silo. By J. E. Stanford. Southern agriculturist. v.69, no.5. May, 1939. p.9.

Silt.

Transportation of sand and gravel in a four-inch pipe: discussion. By M. P. O'Brien and R. G. Folsom. Proceedings: American society of civil engineers. v.65,no.1. January, 1939. p.157-160.

Snow Surveying.

Forecasting stream flow from snow surveys. By George D. Clyde. Civil engineering. v.9,no.4. April, 1939. p.237-239.
Stream-flow forecasts do not provide more water, but they do make possible more efficient utilization of available supply. Made sufficiently far in advance, they form basis for annual planting program of irrigator, generating program of power company, and flood protection program of entire watershed. On snow-fed streams of West, reasonable accuracy in 6-month forecasts is regularly being secured by "percentage method" of interpreting snow survey data, and definite success in predicting daily distribution of stream flow over considerable periods has also been achieved in number of instances. Both types of forecast are discussed.

Weather Bureau's mountain snowfall work. By Merrill Bernard. Civil engineering. v.9,no.3. March, 1939. p.173-175.
All difficulties of obtaining accurate measurements of rainfall are

Snow Surveying. (Cont'd.)

multiplied in collection of snowfall data. Gages must be designed to function under rigorous conditions found at high-elevation water-source regions of West. "Areal significance" is given record by use of multiple gage units. After years of experimentation satisfactory gage has been developed, and in 1937-1938 Weather Bureau had 100 of them in experimental operation in western mountains, in batteries of five each. At three of these stations special study is being made of snowfall-runoff relationships. Article tells of this work and its significance.

Soil Heating.

Electric soil heating. By W. F. Mainguy and C. E. Tourigny. Canadian society of technical agriculturists review. No.4. March, 1935. p.198-202. General description of one of applications of electricity on farm which should help power companies to load up existing unpaying rural lines so as to render them more profitable, and thus warrant construction of new rural extensions. Advantages of electric hotbed are as follows: 1. Soil temperature best suited to any particular plant can be selected and maintained by thermostatic control. 2. Crops may be advanced or retarded at will. 3. Electric hotbed can be used in fall, since constant temperatures can be maintained as weather gets colder, while manure bed loses its heat when it is most needed. 4. Several successive crops may be raised per season without moving soil in bed to replace manure, heating value of which lasts only about six weeks. 5. Hotbed is clean and free from ammonia fumes. 6. Uniform temperature is maintained throughout hotbed. 7. Considerable labor savings are effected, as, once installed, bed can be used for several seasons without disturbing heating cables, and all costs of transporting, placing and removing manure are eliminated. 8. Hotbed can be converted into cold bed simply by turning off current. 9. First cost of electric hotbed is not excessive and can be entirely paid for by one good crop brought on market one week in advance. 10. Cost of operating well constructed electric hotbed often compares favorably with that of manure hotbed, even on straight comparison kilowatt-hour cost versus manure cost, neglecting many advantages which should be credited to electric bed and which can be interpreted in dollars and cents.

Soil Moisture.

Depth of moisture and yield of wheat. By R. R. Hinde. Soil conservation. v.4,no.8. February, 1939. p.192-193.

Native and adapted grasses for conservation of soil and moisture in the Great Plains and Western States. By M. M. Hoover. Washington, U.S. Govt. print. off., 1939. 44p. U.S. Department of agriculture. Farmers' bulletin no.1812.

Soil moisture in relation to potato production. By C. H. Metzger. Market growers journal. v.64,no.6. March 15, 1939. p.146-148. In Nebraska experiments it was found that sea-

Soil Moisture. (Cont'd.)

sonal use of water by potato crop varied from 11 to 18 inches. Each inch of available water produced about 20 bushels of potatoes with greatest demand for water during August and September depending, of course, on the planting date.

Soil Sterilization.

Chemical soil fumigation for more luxurious growth. By F. L. Howard and F. L. Stark, Jr. Farmer's digest. v.2,no.11. March, 1939. p.1-5.

Soil sterilizer uses 30 Kw.-Hr. per yard. By Howard A. Hands. Electrical world. v.110,no.27. December 31, 1938. p.46-48. Unit is large enough for real production work and for thorough cost analysis. Preliminary tests indicate that cost of operation is small factor in relation to value of service, since only 30 kw.-hr. is consumed per cu. yd. (2,050 lb.), and sterilization is profitable both for production of stronger, weed-free plants and processing of more salable product.

Soil Temperature.

Noon undersøkelser over jordtemperaturen og forhold som har innflytelse på den. By Gunnar Semb. Soertrykk av Meldinger fra Norges Landbrukskole, Nov. 19, 1938. 39p. "Litteratur": p.39. Some investigations on the soil temperature in the period of growth and the conditions influencing it.

Soils - Testing.

Hydraulic-feed soil sampler. Engineering news-record. v.122,no.13. March 30, 1939. p.48. Better undisturbed soil samples are assured by hydraulic control of drilling speed in new traveling rig.

Soil testing in Connecticut. By M. F. Morgan and others. New Haven, Conn., 1939. 7p. Connecticut agricultural experiment station. Circular no.131.

Soil testing methods; Universal soil testing system. By M. F. Morgan. New Haven, Conn., 1939. 16p. Connecticut agricultural experiment station. Circular no.127. Condensed and revised from Bulletin no.392.

Specifications.

Stevens master specifications for architects and builders, 1932. By F. B. Stevens, Jr. Chicago, Ill., Stevens master specifications, inc., c1931. Irreg. pag.

Sprays and Spraying Equipment.

Spraying and dusting to control the potato leafhopper on peanuts in Virginia. By E. T. Batten and F. W. Poos. Blacksburg, Va., 1938. 26p. Virginia polytechnic institute. Virginia agricultural experiment station. Bulletin no.316.

Standards.

Service of federal grain standards. Washington, U.S. Govt. print. off., 1938. 18p. U.S. Department of agriculture. Miscellaneous publication no.328.

Trade standards. Adopted by Compressed air institute. 5th ed. New York, Compressed air institute, 1938. 110p.

Swine Houses and Equipment.

Pig from birth to market in six months. By Grady Sellards. Lexington, Ky., 1938. 23p. University of Kentucky. College of agriculture. Extension division. Circular no.211 revised.

Pig housing. By Rosslyn Colam. Journal of the Ministry of agriculture. v.45,no.6. September, 1938. p.553-555.

Terracing.

Maintenance of the drainage-type terrace. By A. Carnes. Soil conservation. v.4,no.7. January, 1939. p.165-169.
If terraces are to pay dividends, systematic maintenance program must be provided and carried out on every farm on which they are used. Construction of even well-designed system of terraces does not in itself assure complete erosion control. Construction is only initial stage, and success of terraces in erosion control depends on whether they are properly maintained and farmed after construction.

National terrace classification. By C. L. Hamilton. Agricultural engineering. v.20,no.3. March, 1939. p.95-96,98.
Ultimate objective of all terraces is soil conservation, but they can attain this objective in three distinct ways: (1) By controlling surface drainage. (2) By increasing rainfall absorption, and (3) By reducing surface slopes. This provides basis for three corresponding basic terrace classifications: (1) Drainage type terrace, (2) Absorptive type terrace, and (3) Bench type terrace.

Textile Fibers.

Production of textile fiber by U.S. casein patent. Rayon textile monthly. v.20,no.1. January, 1939. p.62.

Tide Mills.

Tide mills in Great Britain. Engineering. v.146,no.3796. October 14, 1938. p.445-448.

Tires.

Anti-freeze solution for tractor tires. Farmer's digest. v.2,no.10. February, 1939. p.7-8.

Farm tractors on rubber. By Joseph Albus. Montana farmer. v.26, no.7. December 1, 1938. p.1. Pneumatic tires reduce slippage, increase efficiency of operation.

Die forderungen der landwirtschaft für den bau luftbereifter ackerwagen. By J. Lengsfeld. Technik in der landwirtschaft. v.20,no.1. January, 1939. p.10-14. Demands of agriculture for field trucks with pneumatic tires.

Freeze-proofing tractor tires. By Douglas Gray. New Jersey farm and garden. v.9,no.12. December, 1938. p.12.

Protect tractor tires. The farmer. v.56,no.23. November 5, 1938. p.11.

They ride on air. By Arnold Skromme. Iowa agriculturist. v.39,no.8. March, 1939. p.7. Two-thirds of the new tractors sold in the United States in 1938 are rolling on rubber as farmers seek operating economy.

Weight for tractor tires. Michigan farmer. v.191,no.1. January 14, 1939. p.27.

Tractors.

Farm tractors for 1939. Utah farmer. v.58,no.14. March 10, 1939. p.6. Many small tractors on market--economy of operation is stressed.

Garden tractors. Farm journal. v.63,no.3. March, 1939. p.62. Advantages for the garden tractor: 1. Overhead cost, when not in use is low as compared to other forms of power. 2. Operation cost is low. 3. Garden tractor when properly handled does not destroy plants. 4. It is a labor and time saver. 5. It may be adapted to belt work. 6. Small sizes are especially adapted to narrow row crops.

Mechanical details of the new Cletracs. Implement and tractor. v.54,no.6. March 18, 1939. p.16-17,47.

Tractor demand on the increase. Implement and tractor. v.54,no.6. March 18, 1939. p.22,40. Smaller sizes of general purpose units are opening new markets.